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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/647,932

08/26/2003

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028080-0109

3088

7590

03/01/2005

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EXAMINER

LAY, MICHELLE K

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,932

Applicant(s)

PAIR ET AL.

Examiner

Michelle K. Lay

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-36 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "131" in the specification [0053] and "331" in Fig. 3 have both been used to designate the knob on the shutter. Reference characters "129" in the specification [0053] and "329" have both been used to designate the shutter louvers. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 151 [0082], 425 [0097]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be

labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "421" has been used to designate both window and door [0097]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 147 in Fig. 1. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 15 is objected to because of the following informalities: Claim 15 is dependent on itself. Examiner assumes that claim 15 should be dependent on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 30, 31 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. US 6,278,418 B1 to Doi.

Doi discloses a three-dimensional imaging system providing an image display system, a method and a recording medium, whereby a three-dimensional display of virtual images causes an observer to perceive virtual images three-dimensionally. As shown in Fig. 1, a projection space S for an image display device is surrounded by six surfaces. Three-dimensional images are projected using each of the four sides (A – D), the ceiling (E) and floor (F), which form this projection space, as image display surfaces [column 5, lines 40 – 47]. One work station is used for each image display surface

(claim 30) [column 7, line 68]. The image data generated by each work station is transferred to each of the projects (4a – 4f) via a communications line. Each of the six work stations constituting the image processing block (101) transfers its image data to the projector, which is to display the corresponding image [column 8, lines 11 – 15]. Each user (player) wears sensors which respectively transmit detection signals in order to specify the player's position [column 6, lines 4 – 6]. Furthermore, the positions of the players' viewpoints can be detected by means of sensors S_1 and S_4 , located on the goggles worn by the users, alone (claim 30, 35) [column 7, lines 13 – 15]. The work stations calculate coordinate conversions for each pixel in the original image data, whilst referring to a graphics library. Referring to Fig. 6, the shapes of the sections formed where each image display surface cuts the projection PO on its path to this projection surface, represent the images that are actually to be displayed on each image display surface [column 9, lines 60 – 65]. If accurate calculation is conducted, it is possible to generate a three-dimensional image which can be perceived as a virtual object by the player, without the player being aware of the border lines between surfaces A, B and F in Fig. 6 (claims 30, 31) [column 10, lines 1 – 5].

Furthermore, in regards to claim 31, as illustrated in Fig. 7, a dinosaur is displayed as a character that is the object of attack by the players. The character is displayed such that an image is perceived in the spatial position C. The image processing block (101) refers to the detection signals from the sensors attached to the players' hands, and displays a weapon as an image that is perceived at the spatial position of one of the players' hands. The image processing block (101) sets balls, CB_1 , CB_2 , for determining

impacts (claim 31). In Fig. 8, the central point of ball CB_1 on the dinosaur side is taken as O_1 and its radius, as r_1 , and the central point of ball WB_1 on the weapon side is taken as O_2 , and its radius, as r_2 . If the central points of two balls are known, the distance, d , between their respective central points can be found. Therefore, by comparing the calculated distance, d , and the sum of the radii, r_1 and r_2 , of the two balls, it can be determined whether or not there is impact between the weapon W_1 , and the dinosaur C . It can also be used for determining impacts between the players and the object of attack [column 10, lines 34 – 50]. The ray gun W_2 can be displayed as a virtual image, but it is also possible to use a model gun that is actually held by the player [column 10, lines 50 – 53] providing a partially real and partially simulated environment (claims 30, 31).

7. Claims 32, 33, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,310,794 to Richey.

Richey discloses a panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23), in which the viewer is surrounded by display units such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [column 9, lines 14 – 23]. The floor (130) and its associated display unit (11) beneath, to the sides, and over the viewer/operator are integrated so the viewer is presented with a substantially continuous scene for viewing [column 28, lines 15 – 19] (claim 32).

Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers, allow the entry and exit assembly (131) to move back and forth in an open and closed position to enable viewer entry and exit [column 28, lines 28 – 32]. These means may also be used for easy assembly and disassembly (claim 32). It may be obvious to one in the art that the display units located on the sides of the large display assembly may project images to one's liking, such as an image of wall texture as claimed in claim 33. Richey additionally discloses that it is further foreseen that the optical and camera arrangements disclosed in Figs. 6 – 17 may transmit their recorded image to various types of sensors such as visual, motion detection, and pyroelectric sensors (claim 36) [column 34, lines 57 – 61].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 – 20, 29, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,310,794 to Richey in view of US Patent No. US 6,522,311 B1 to Kadowaki et al.

Richey teaches the claimed limitations of claims 1 – 20, 29, 34, with the exception of teaching placing at least one real, three-dimensional object within the

structure. However, Kadowaki et al. discloses an image information displaying system where an object is placed behind a hologram screen.

Richey discloses a panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23) (claim 1), in which the viewer is surrounded by display units such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction (claims 1, 2) [column 9, lines 14 – 19]]. The assembly is designed to facilitate a single or plural number of viewers (claim 16) [column 28, lines 14 – 15]. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [column 9, lines 20 – 23]]. The floor (130) and its associated display until (11) beneath, to the sides (claim 4), and over the viewer/operator (claim 3) are integrated so the viewer is presented with a substantially continuous scene for viewing [column 28, lines 15 – 19]. Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers (claim 15), allow the entry and exit assembly (131) to move back and forth in an open and closed position to enable viewer entry and exit [column 28, lines 28 – 32]. These means may also be used for easy assembly and disassembly (claim 14). Components of the display assembly cooperate to display a substantially continuous panoramic scene of spherical coverage about the viewer [column 9, lines 33]. The panoramic scene consists of a plurality of image segments that form a composite image on a single video frame (claim 1). Image segments represent portions of a camera recorded scene or computer graphic information. Typically the segments represent adjacent portions of

the surrounding panoramic scene. Each image segment is displayed at a designated area within the display assembly such that the recorded scene is re-formed in the same geometric or geographic orientation in which the scene was recorded [column 9, lines 48 – 54].

Kadowaki et al. discloses an image information displaying system where an object is placed behind a hologram screen. Referring to Figs. 1 – 3, the image information displaying system (1) has a transparent support (10), a hologram screen (11) attached to the support (10), and a projector (12) for projecting image information onto the screen (11). The system (1) also has a sensor (13) that senses a person (8) who enters a viewing angle (15) of the screen (11) (claim 1), and a controller (14) for controlling the projector (12) according to signals from the sensor (13) so that the projector (12) may project image information onto the screen (11) [column 25, lines 35 – 43]. The system (1) is installed in a showroom (20). The transparent support (10) on which the screen (11) is attached is a glass window of the showroom (20). An exhibit (21) is set behind the screen (11) (claim 1) [column 25, lines 44 – 47].

Therefore, it would have been obvious to one in the art at the time the invention was made to incorporate the three-dimensional, real object of Kadowaki et al. with the virtual reality display system of Richey because this would allow the user to feel completed immersed within the virtual reality world. The use of real objects and moveable surface area further provides the user a sense of a comfortable reality so that users may be able to physically touch three-dimensional objects without having to pretend they are objects within the space.

In regards to claim 5, it would have been obvious to one in the art that the display units located on the sides of the large display assembly of Richey may project images to one's liking, such as an image of wall texture as claimed.

Referring to claims 6 – 10, 18, it would have been obvious to one in the art to allow other real objects of Kadowaki et al. within the virtual display of Richey to give the user a more real experience within the display assembly and due to the volumetric space within the room. Since a number of people are shown in this room, providing chairs and other objects would make for a more comfortable environment. These objects may include an operable door (claim 6), working window (claims 7, 8) with operable shutters (9), and dummy walls (claim 18). Furthermore, in regard to claim 10, if the object is a window or a door, it would have been obvious to one in the art that the displays behind such objects may depict images of appropriate environments that one may find when looking through such objects to simulate to the user a real environment or different location. Additionally, if the objects are dummy walls within the display assembly of Richey, multiple rooms may be created for the user (claim 18).

In reference to claims 11 – 13, Richey illustrates in Fig. 6 the input means for recording a panoramic scene of spherical coverage, which is the panoramic camera system including a camera (43), and which comprises a portable panoramic video viewing and recording system (27), referred to as a panoramic camcorder. The panoramic camcorder (27) is carried by a host or vehicle [column 10, lines 6 – 13]. It may be obvious to one in the art that the images captured by the panoramic camcorder (27) may comprise images from the real environment (claim 12). Referring to Figs. 9 –

12, the optical elements (41) are interfaced with the camera (43) to facilitate the composite image (26) being transmitted to the recording surface (42) of the camera (43) by conventional means. The recording surface (42) is directly associated with an image processor means (44) of a self-scanning solid state imaging device such as a charge coupled device located in the image plane of each respective lens element (41) (claim 13) [column 11, lines 57 – 65]. Referring to Figs. 6 – 10 and 15 – 17, the electrical section (45) is structured to convert the visual images received by the image processor (44) into electrical video signals [column 12, lines 66 – 68] such that the information is in a format that is compatible with standard video processing equipment [column 13, lines 1 – 2]. As shown in Fig. 6 and 9, the picture signal from the camera (43) is then transferred through conductor (46) to a conventional portably structured videotape recorder/player (47) [column 13, lines 14 – 17]. The television signal is then stored by the recorder/player (47) on video tape (claim 11) [column 13, lines 29 – 30].

Regarding claims 17, 19, it would have been obvious to one in the art that the exhibit of Kadowaki et al. may include objects that coincide with what is displayed on the screen, allowing for a simulated environment to the user within the display assembly of Ritchey. Such an environment may be an alleyway, as claimed in claim 19, where the real objects of Kadowaki et al. may include a car (21) as shown in Fig. 1 of Kadowaki et al. The projector (12) may project images onto screen (11) consisting of bricks to portray to the user that he/she is in an alleyway.

In reference to claim 20, Ritchey discloses that it may be foreseen that the display assembly [Fig. 32 (23)] may be used as a simulator for various kinds of vehicles [Fig. 55

(149)]. Referring to Figs. 54 and 55, the device might take the form of simulated controls (150) for such vehicles (149) as a land, sea or air vessel as claimed [column 34, lines 34 – 40].

Regarding claim 29, Richey discloses a stereographic field of view is arrived by sampling left and right eye fields of either of side of the orientation defined by the position sensors [Fig. 26 (97)]. To achieve a stereographic effect, image segments [Fig. 29 (13)] for the left eye and right eye are chosen from two adjacent objective lenses [Fig. 17 (37)], each with a different, but adjacent, overlapping field of view of the visual scene. Fig. 30 illustrates the resultant stereoscopic image (101) that the image processing system has processed for stereographic display [column 21, lines 50 – 62].

Referring to claim 34, Richey discloses that it is further foreseen that the optical and camera arrangements disclosed in Figs. 6 – 17 may transmit their recorded image to various types of sensors such as visual, motion detection, and pyroelectric sensors [column 34, lines 57 – 61].

9. Claim 21 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,310,794 to Richey in view of US Patent No. US 6,522,311 B1 to Kadowaki et al. as applied to claim 1 above, and further in view of US Patent No. 5,086,385 to Launey et al.

Richey in view of Kadowaki et al. teaches the claimed limitations of claim 21 – 28 with the exception of including a computer-controlled sensory generator, other than a display. However, Launey et al. discloses a system and method of providing an

expandable home automation controller that supports multiple numbers and multiple different types of data communications with both appliances and subsystems. Referring to Fig. 1, the system is build around a microcomputer containing a central processor (10) [column 7, lines 44 – 52]. The central processor (10) is connected, by means of a data bus, or its equivalent, through a plurality of standard or custom interfaces to either control each of the subsystems automated within the home environment or to transmit or receive either data or instructions from within the home environment (claims 21, 22) [column 7, lines 57 – 62]. The central processor (10) may also be preferable connected to a second parallel interface (24b) by means of the data bus (12). The parallel interface (24b) communicates directly with a process control system (26b) made up for a relay input/output board, analog input board, or a digital input/output board [column 8, lines 50 – 60]. Both the relay output board and the input/output board may be connected to the electrical appliances or devices (31) such as door locks, security gates, lawn lights (claim 27), speakers (claim 23), or any other switch-controlled device. The relay output and input/output boards may also be connected to the plumbing related systems (33) such as showers, faucets, pools, spas, and foundations [column 8, lines 62 – 68]. The analog board may be connected directly to the analog sensors (29), which provide a voltage output indicating, for example, temperature (claim 28), humidity, pressure, light level, distance, vibration (claims 24, 25), air quality, or any other useful parameter for automation purposes (claim 26). The input/output board may also be connected to the digital sensors (27), such as security sensors, pressure mats,

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driveways sensors, status relays, or other digital indicator devices [column 9, lines 1 – 8].

Therefore, it would have been obvious to one in the art to combine the automation controller of Launey et al. with the virtual display assembly of Richey in view of Kadowaki et al. because the additional sensory enhances the virtual environment to portray to the user the that he/she is in a real atmosphere.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mkl 02.18.2005



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